SEQUENCE LISTING

<110> Vogels, Ronald

Havenga, Menzo

Bout, Abraham

<120> Gene delivery vectors provided with a tissue tropism for smooth muscle cells, and/or endothelial cells

<130> 2183-4231US

<140> US 09/444,284

<141> 1999-11-19

<150> EP 98203921.6

<151> 1998-11-20

<160> 24

<170> PatentIn version 3.0

<210> 1

<211> 35

<212> DNA

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<223> Description of Artificial Sequence: primer

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<223> Description of Artificial Sequence: primer

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<223> /note="Tail nucleotide C"

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<223> Description of Artificial Sequence: primer

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<223> Description of Artificial Sequence: primer

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<210> 8

<211> 36

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<223> Description of Artificial Sequence: primer

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<223> /note="Knob nucleotide 3"

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<210> 9

<211> 30

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<223> Description of Artificial Sequence: primer

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<223> /note="Knob nucleotide 4"

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<210> 10

<211> 30

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<223> Description of Artificial Sequence: primer

<220>

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<223> /note="Knob nucleotide 5"

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<210> 11

<211> 30

<212> DNA

<213> Artificial Sequence

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<223> Description of Artificial Sequence: primer

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<223> /note="Knob nucleotide 6"

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<210> 12

<211> 37

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<223> Description of Artificial Sequence: primer

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<223> /note="Knob nucleotide 7"

<400> 12
ccgttaatta agcccttatt gttctgttac ataagaa 37

<210> 13

<211> 30

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<220>

<221> misc_feature

<223> /note="Knob nucleotide 8"

<400> 13
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<210> 14

<211> 42

<212> DNA

<213> Artificial Sequence

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<221> misc_feature

<223> Description of Artificial Sequence: primer NY-UP

<400> 14
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<210> 15

<211> 19

<212> DNA

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<223> Description of Artificial Sequence: primer NY-DOWN

<400> 15
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<210> 16

<211> 1746

<212> DNA

<213> Adenoviridae

<220>

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<223> /note="Ad5 chimeric fiber"

<400> 16
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gagagtcccc ctggggtact ctctttgcgc ctatccgaac ctctagttac ctccaatggc 180

atgcttgcgc tcaaaatggg caacggcctc tctctggacg aggccggcaa ccttacctcc 240

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gaataa 1746

<210> 17

<211> 1752

<212> DNA

<213> Adenoviridae

<220>

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<223> /note="Ad5/fib12 chimeric fiber"

<220>

<221> misc_feature

<222> (1722)..(1722)

<223> n can be any nucleotide

<400> 17
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aaaccaccag gtgtattagc acttaattac aaagacccca ttgtaactga aaatggaacc 180

cttacactca agctagggga cggaataaaa cttaatgccc aaggtcaact tacagctagt 240

aataatatca atgttttgga gccccttacc aacacctcac aaggtcttaa actttcttgg 300

agcgcccccc tagcagtaaa ggctagtgcc ctcacactta acacaagagc gcccttaacc 360

acaacggatg aaagcttagc cttaataacc gcccctccca ttacagtaga gtcttcgcgt 420

ttgggcttgg ccaccatagc ccctctaagc ttagatggag gtggaaacct aggtttaaat 480

ctttctgctc ccctggacgt tagtaacaac aatttgcatc tcaccactga aactcccttа 540

gttgtaaatt ctagcggtgc cctatctgtt gctactgcag accccataag tgttcgcaac 600

aacgctctta ccctacctac ggcagatccg ttaatggtga gctccgatgg gttgggaata 660
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taaatgcatt ag 1752

<210> 18

<211> 1071

<212> DNA

<213> Adenoviridae

<220>

<221> misc_feature

<223> /note="Ad5/fib16 chimeric fiber"

<400> 18
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agcagctcac aacacccctt tataaaccct ggtttcattt cctcaaatgg ttttgcacaa 120

agcccagatg gagttctaac tcttaaatgt gttaatccac tcactaccgc cagcggaccc 180

ctccaactta aagttggaag cagtcttaca gtagatacta tcgatgggtc tttggaggaa 240

aatataactg ccgaagcgcc actcactaaa actaaccact ccataggttt attaatagga 300

tctggcttgc aaacaaagga tgataaactt tgtttatcgc tgggagatgg gttggtaaca 360

aaggatgata aactatgttt atcgctggga gatgggttaa taacaaaaaa tgatgtacta 420

tgtgccaaac taggacatgg ccttgtgttt gactcttcca atgctatcac catagaaaac 480

aacaccttgt ggacaggcgc aaaaccaagc gccaactgtg taattaaaga gggagaagat 540

tccccagact gtaagctcac tttagttcta gtgaagaatg gaggactgat aaatggatac 600

ataacattaa tgggagcctc agaatatact aacaccttgt ttaaaaacaa tcaagttaca 660

atcgatgtaa acctcgcatt tgataatact ggccaaatta ttacttacct atcatccctt 720

aaaagtaacc tgaactttaa agacaaccaa aacatggcta ctggaaccat aaccagtgcc 780

aaaggcttca tgcccagcac caccgcctat ccatttataa catacgccac tgagacccta 840

aatgaagatt acatttatgg agagtgttac tacaaatcta ccaatggaac tctctttcca 900

ctaaaagtta ctgtcacact aaacagacgt atgttagctt ctggaatggc ctatgctatg 960

aatttttcat ggtctctaaa tgcagaggaa gccccggaaa ctaccgaagt cactctcatt 1020

acctcccccc tctttttttc ttatatcaga gaagatgact gaatgcatta g 1071

<210> 19

<211> 1101

<212> DNA

<213> Adenoviridae

<220>

<221> misc_feature

<223> /note="Ad5/fib28 chimeric fiber"

<400> 19
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ggattccaaa acttcccacc tggggtcctg tcactcaaac tggctgaccc aatcaccatc 180

gctaatgggg atgtctcact caagttggga ggcggactga cggtggaaaa agagtctgga 240

aacttaactg tgaaccctaa ggctcccttg caagttgcaa gtggacaatt ggaattagca 300

tatgattctc catttgatgt taaaaacaat atgcttactc ttaaagcagg tcacggctta 360

gcagttgtaa cgaaagacaa tactgattta caaccactaa tgggcacact tgttgtttta 420

actggcaaag gcattggcac tggcacaagt gctcacggtg gaaccataga tgtgagaata 480

ggaaaaaacg gaagtctggc atttgacaaa aatggagatt tggtggcctg ggataaagaa 540

aatgacaggc gcactctatg gacaactcca gacacatctc caaattgcaa aatgagtgaa 600

gtcaaagact caaagcttac tcttattctt acaaaatgcg gaagtcaaat tctaggaagt 660

gtatctttgc ttgctgtaaa aggagaatat caaaatatga ctgccagtac taataagaat 720

gtaaaaataa cactgctatt tgatgctaat ggagtcttgt tagaaggatc cagtcttgat 780

aaagagtact ggaactttag aaacaatgat tctactgtgt ctggaaaata tgaaaatgct 840

gttccgttca tgcctaacat aacagcttat aaacccgtca attctaaaag ctatgccaga 900

agtcacatat ttggaaatgt atatattgct gctaagccat ataatccagt ggttattaaa 960

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gcccaagaat gaatgcatta g 1101

<210> 20

<211> 1668

<212> DNA

<213> Adenoviridae

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<223> /note="Ad5/fib40-L chimeric fiber"

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<221> misc_feature

<222> (1588)..(1588)

<223> n can be any nucleotide

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ggcttgcaag aaaaacctcc gggagtcctc agcctgaaat acactgatcc acttacaacc 180

aaaaacgggg ctttaacctt aaaattgggc acgggactaa acattgataa aaatggagat 240

ctttcttcag atgctagcgt ggaagttagc gcccctatca ctaaaaccaa caaaatcgta 300

ggtttaaatt acactaagcc tctcgctctg caaaataacg cgcttactct ttcttacaac 360

gcgccctttа acgtagtaaa taataattta gctctaaata tgtcacagcc tgttactatt 420
aatgcaaaca acgaactttc tctcttaata gacgccccac ttaatgctga cacgggcact 480
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gcaatagaag gctactcatt aaaattcncc tggcgcgttc gaaataatga acgttttgac 1620
atcccctgtt gctcattttc ttatgtaaca gaacaataaa tgcattag 1668

<210> 21

<211> 1062

<212> DNA

<213> Adenoviridae

<220>

<221> misc_feature

<223> /note="Adenovirus16 fiber sequence"

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atggccaaac gagctcggct aagcagctcc ttcaatccgg tctaccccta tgaagatgaa 60

agcagctcac aacacccctt tataaaccct ggtttcattt cctcaaatgg ttttgcacaa 120

agcccagatg gagttctaac tcttaaatgt gttaatccac tcactaccgc cagcggaccc 180

ctccaactta aagttggaag cagtcttaca gtagatacta tcgatgggtc tttggaggaa 240

aatataactg ccgcagcgcc actcactaaa actaaccact ccataggttt attaatagga 300

tctggcttgc aaacaaagga tgataaactt tgtttatcgc tgggagatgg gttggtaaca 360

aaggatgata aactatgttt atcgctggga gatgggttaa taacaaaaaa tgatgtacta 420

tgtgccaaac taggacatgg ccttgtgttt gactcttcca atgctatcac catagaaaac 480

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tccccagact gtaagctcac tttagttcta gtgaagaatg gaggactgat aaatggatac 600

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aatttttcat ggtctctaaa tgcagaggaa gccccggaaa ctaccgaagt cactctcatt 1020

acctcccccc tctttttttc ttatatcaga gaagatgact ga 1062

<210> 22

<211> 1074

<212> DNA

<213> Adenoviridae

<220>

<221> misc_feature

<223> /note="Adenovirus5/chimeric fiber16 sequence"

<400> 22

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ggttttgcac aaagcccaga tggagttcta actcttaaat gtgttaatcc actcactacc 180

gccagcggac ccctccaact taaagttgga agcagtctta cagtagatac tatcgatggg 240

tctttggagg aaaatataac tgccgaagcg ccactcacta aaactaacca ctccataggt 300

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gggttggtaa caaaggatga taaactatgt ttatcgctgg gagatgggtt aataacaaaa 420

aatgatgtac tatgtgccaa actaggacat ggccttgtgt ttgactcttc caatgctatc 480

accatagaaa acaacacctt gtggacaggc gcaaaaccaa gcgccaactg tgtaattaaa 540

gagggagaag attccccaga ctgtaagctc actttagttc tagtgaagaa tggaggactg 600

ataaatggat acataacatt aatgggagcc tcagaatata ctaacacctt gtttaaaaac 660

aatcaagtta caatcgatgt aaacctcgca tttgataata ctggccaaat tattacttac 720

ctatcatccc ttaaaagtaa cctgaacttt aaagacaacc aaaacatggc tactggaacc 780

ataaccagtg ccaaaggctt catgcccagc accaccgcct atccatttat aacatacgcc 840

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gcctatgcta tgaatttttc atggtctcta aatgcagagg aagccccgga aactaccgaa 1020

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<210> 23

<211> 353

<212> PRT

<213> Adenoviridae

<220>

<221> misc_feature

<223> /note="Adenovirus16 fiber protein sequence"

<400> 23

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Tyr Glu Asp Glu Ser Ser Ser Gln His Pro Phe Ile Asn Pro Gly Phe
20 25 30

Ile Ser Ser Asn Gly Phe Ala Gln Ser Pro Asp Gly Val Leu Thr Leu
35 40 45

Lys Cys Val Asn Pro Leu Thr Thr Ala Ser Gly Pro Leu Gln Leu Lys
50 55 60

Val Gly Ser Ser Leu Thr Val Asp Thr Ile Asp Gly Ser Leu Glu Glu
65 70 75 80

Asn Ile Thr Ala Ala Ala Pro Leu Thr Lys Thr Asn His Ser Ile Gly
85 90 95

Leu Leu Ile Gly Ser Gly Leu Gln Thr Lys Asp Asp Lys Leu Cys Leu
100 105 110

Ser Leu Gly Asp Gly Leu Val Thr Lys Asp Asp Lys Leu Cys Leu Ser
115 120 125

Leu Gly Asp Gly Leu Ile Thr Lys Asn Asp Val Leu Cys Ala Lys Leu
130 135 140

Gly His Gly Leu Val Phe Asp Ser Ser Asn Ala Ile Thr Ile Glu Asn
145 150 155 160

Asn Thr Leu Trp Thr Gly Ala Lys Pro Ser Ala Asn Cys Val Ile Lys
165 170 175

Glu Gly Glu Asp Ser Pro Asp Cys Lys Leu Thr Leu Val Leu Val Lys
180 185 190

Asn Gly Gly Leu Ile Asn Gly Tyr Ile Thr Leu Met Gly Ala Ser Glu
195 200 205

Tyr Thr Asn Thr Leu Phe Lys Asn Asn Gln Val Thr Ile Asp Val Asn
210 215 220

Leu Ala Phe Asp Asn Thr Gly Gln Ile Ile Thr Tyr Leu Ser Ser Leu
225 230 235 240

Lys Ser Asn Leu Asn Phe Lys Asp Asn Gln Asn Met Ala Thr Gly Thr
245 250 255

Ile Thr Ser Ala Lys Gly Phe Met Pro Ser Thr Thr Ala Tyr Pro Phe
260 265 270

Ile Thr Tyr Ala Thr Glu Thr Leu Asn Glu Asp Tyr Ile Tyr Gly Glu
275 280 285

Cys Tyr Tyr Lys Ser Thr Asn Gly Thr Leu Phe Pro Leu Lys Val Thr
290 295 300

Val Thr Leu Asn Arg Arg Met Leu Ala Ser Gly Met Ala Tyr Ala Met
305 310 315 320

Asn Phe Ser Trp Ser Leu Asn Ala Glu Glu Ala Pro Glu Thr Thr Glu
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Tyr Glu Asp Glu Ser Ser Ser Gln His Pro Phe Ile Asn Pro Gly Phe
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Ile Ser Ser Asn Gly Phe Ala Gln Ser Pro Asp Gly Val Leu Thr Leu
35 40 45

Lys Cys Val Asn Pro Leu Thr Thr Ala Ser Gly Pro Leu Gln Leu Lys
50 55 60

Val Gly Ser Ser Leu Thr Val Asp Thr Ile Asp Gly Ser Leu Glu Glu
65 70 75 80

Asn Ile Thr Ala Glu Ala Pro Leu Thr Lys Thr Asn His Ser Ile Gly
85 90 95

Leu Leu Ile Gly Ser Gly Leu Gln Thr Lys Asp Asp Lys Leu Cys Leu
100 105 110

Ser Leu Gly Asp Gly Leu Val Thr Lys Asp Asp Lys Leu Cys Leu Ser
115 120 125

Leu Gly Asp Gly Leu Ile Thr Lys Asn Asp Val Leu Cys Ala Lys Leu
130 135 140

Gly His Gly Leu Val Phe Asp Ser Ser Asn Ala Ile Thr Ile Glu Asn
145 150 155 160

Asn Thr Leu Trp Thr Gly Ala Lys Pro Ser Ala Asn Cys Val Ile Lys
165 170 175

Glu Gly Glu Asp Ser Pro Asp Cys Lys Leu Thr Leu Val Leu Val Lys
180 185 190

Asn Gly Gly Leu Ile Asn Gly Tyr Ile Thr Leu Met Gly Ala Ser Glu
195 200 205

Tyr Thr Asn Thr Leu Phe Lys Asn Asn Gln Val Thr Ile Asp Val Asn
210 215 220

Leu Ala Phe Asp Asn Thr Gly Gln Ile Ile Thr Tyr Leu Ser Ser Leu
225 230 235 240

Lys Ser Asn Leu Asn Phe Lys Asp Asn Gln Asn Met Ala Thr Gly Thr
245 250 255

Ile Thr Ser Ala Lys Gly Phe Met Pro Ser Thr Thr Ala Tyr Pro Phe
260 265 270

Ile Thr Tyr Ala Thr Glu Thr Leu Asn Glu Asp Tyr Ile Tyr Gly Glu
275 280 285

Cys Tyr Tyr Lys Ser Thr Asn Gly Thr Leu Phe Pro Leu Lys Val Thr
290 295 300

Val Thr Leu Asn Arg Arg Met Leu Ala Ser Gly Met Ala Tyr Ala Met
305 310 315 320

Asn Phe Ser Trp Ser Leu Asn Ala Glu Glu Ala Pro Glu Thr Thr Glu
325 330 335

Val Thr Leu Ile Thr Ser Pro Phe Phe Phe Ser Tyr Ile Arg Glu Asp
340 345 350

Asp